

(IGT) assesses decision-making under ambiguity and risk, in which individuals are faced with four card choices associated with varying monetary reinforcer/loss contingencies. The rat Gambling Task is a pre-clinical version using palatable reinforcers as wins and timeouts mimicking losses. However, studies with interspecies comparisons in these tasks are lacking, but important to facilitate translation of information that may help unravel the complex processes of decision-making and generate clinical advances.

Objectives: This study explores decision-making strategies among humans and rats performing the IGT and rGT.

Methods: A total of 270 young human adults performed a computerized version of the IGT, and 72 adult outbred male Lister Hooded rats performed the rGT. Performance was assessed and explored by normative scoring approaches and subgroup formations based on individual choices.

Results: Results showed that most humans and rats learned to favor the advantageous choices, but the overall level of performance differed considerably. Humans displayed both exploration and learning as the task progressed, while rats showed relatively consistent pronounced preferences for the advantageous choices throughout the task. Nevertheless, variability in individual choice preferences during end performance were evident in both species.

Conclusions: Results are discussed in relation to procedural differences impacting performance and potential to study different aspects of decision-making. This is a first attempt to provide formal evaluation of similarities and differences regarding decision-making processes in the IGT and rGT from an explorative perspective.

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Cytomegalovirus infection associated with smaller cerebellum in severe mental illness

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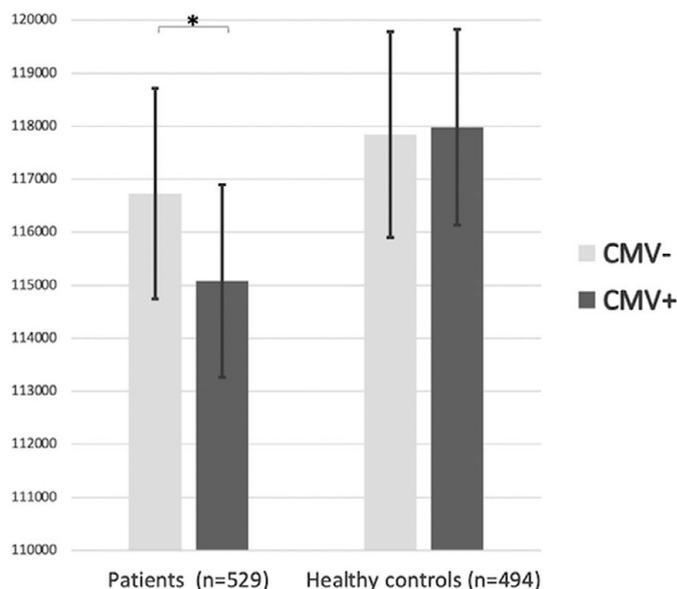
Introduction: Postnatal cytomegalovirus (CMV) infection of immunocompetent hosts is usually inapparent but typically results in lifelong latency. Congenital CMV infections as well as CMV infections in patients with immunodeficiencies have been linked to major cerebellar pathology. Patients with severe mental illness have been repeatedly found to have smaller cerebellum, and they may be particularly susceptible to CMV infections. Finally, both animal and human studies have shown a differential male and female immune response to CMV.

Objectives: We evaluated whole cerebellar grey matter volumes (CGMV) in CMV immunoglobulin G (IgG) seropositive (CMV+) and seronegative (CMV-) patients with severe mental illness and healthy controls (HC). We hypothesized that CMV seropositivity, reflecting previous infection and current latency, is associated with smaller CGMV in patients but not in HC, and that such a putative association may be sex-dependent.

Methods: We included 529 adult patients with severe mental illness (CMV+ 57%, women 48%), i.e., 324 patients with schizophrenia spectrum disorders and 205 patients with bipolar spectrum disorders, and 494 HC (CMV+ 56%, women 45%). MRI scans were obtained with a 1.5T Siemens scanner (n=596) and two 3.0T General Electric scanners (n=427), and processed with FreeSurfer v6.0. Circulating CMV IgG concentrations were measured with immunoassays. In age-, scanner- and estimated total intracranial volume-adjusted analyses of covariance (ANCOVAs), we investigated main and interaction effects of CMV status and sex on CGMV in patients and HC.

Results: CMV+ patients had smaller CGMV than CMV- patients (p=0.042). There was no CGMV difference between CMV+ and CMV- HC (p=0.858). The adjusted CGMV means in CMV+ patients and CMV- patients were 115078 mm³ and 116725 mm³, respectively (p=0.042); the adjusted CGMV means in CMV+ and CMV- HC were 117980 mm³ and 117840 mm³, respectively (p=0.858) (Image). Among patients, a trend towards CMV-by-sex interaction (p=0.073) was found. Post-hoc analyses showed a significant CMV-CGMV association in the female patient group (p=0.005), with no association among male patients (p=0.840).

Image:



Conclusions: CMV IgG seropositivity is associated with smaller cerebellum in severe mental illness, an effect driven by the female patients, but not among HC. This may indicate a CMV-related deleterious impact on cerebellum restricted to patients.

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